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-	0	431/354.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/06/23 12:56

United States Patent [19]
Berkelder

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[45] **Date of Patent:** **Jan. 21, 1986**

[54] **GAS BURNER**

[75] **Inventor:** **Wilhelm H. Berkelder, Aalten,**
Netherlands

[73] **Assignee:** **Apparatenfabriek ATAG B.V.,**
Netherlands

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[51] **Int. Cl.:** **F23D 13/40**

[52] **U.S. Cl.:** **431/354; 126/39 E;**
239/396; 48/180 F

[58] **Field of Search** **431/154, 353, 354;**
126/39 E, 39 K; 239/390, 396; 48/180 P, 180 F

[56] **References Cited**

U.S. PATENT DOCUMENTS

670,740 3/1901 Sheppard 126/39 K
3,822,982 7/1974 DuPerow 431/193

3,874,841 4/1975 Ferlin 126/39 E X
4,243,176 1/1981 Hays 431/354 X

FOREIGN PATENT DOCUMENTS

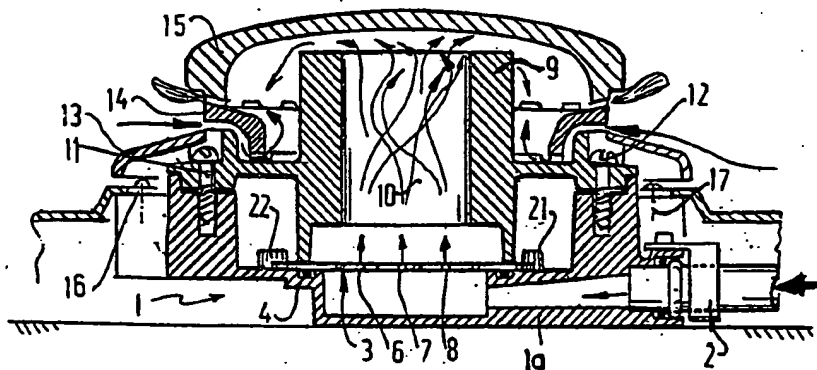
2456906 5/1979 France .
636870 3/1962 Italy 431/354
1223005 2/1971 United Kingdom .

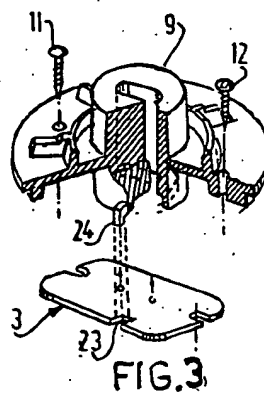
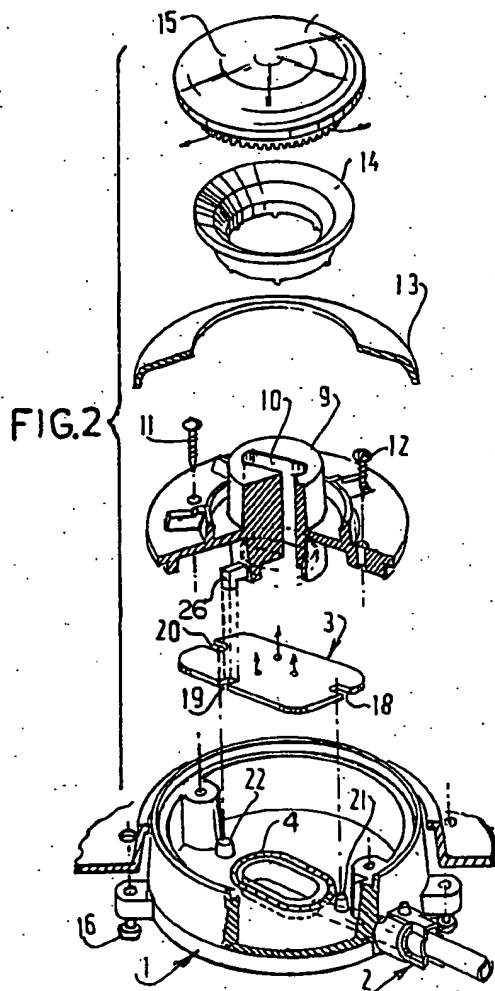
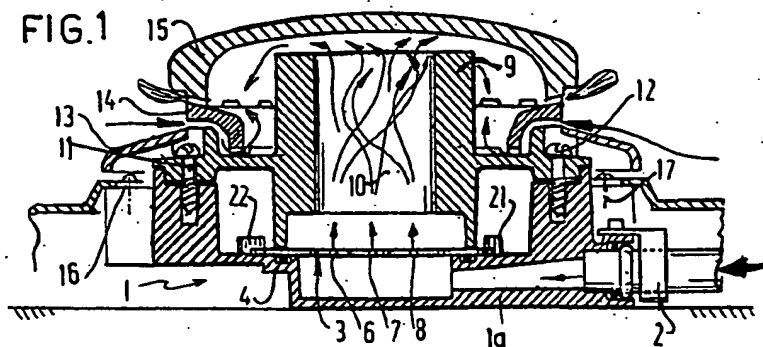
Primary Examiner—Margaret A. Focarino
Attorney, Agent, or Firm—Birch, Stewart, Kolasch &
Birch

[57] **ABSTRACT**

A gas burner for a domestic cooking apparatus comprising a gas feed tube, a mixing tube and a burner cover near the outlet of the mixing tube. An outlet member is provided in the form of an apertured flow plate which is connected to the gas feed tube in sealing relationship by way of an intermediate flexible ring. By exchanging the flow plate the burning capacity can be changed at the site of use.

2 Claims, 3 Drawing Figures





GAS BURNER

BACKGROUND OF THE INVENTION

The invention relates to a gas burner for use in a domestic cooking apparatus comprising a gas feed tube for introducing gas through an effluent member into a mixing tube and a burner cover near the outlet side of the mixing tube. With respect to dimensions gas burners are proportioned to the burner capacity. This depending upon the burner capacity for each type of gas burner, different sized components have to be manufactured and stocked. At the site of use, the burner capacity can only be changed by removing the whole burner and replacing it by another gas burner having a different capacity. This known practice is inconvenient because the production and storing of components are relatively expensive.

SUMMARY OF THE INVENTION

The invention has for its object to obviate these disadvantages and to provide a gas burner, having a great many component parts which are independent of the burner capacity.

According to the invention this is achieved in providing an effluent member shaped in the form of a releasable apertured flow plate covering the gas feed tube. In this way a universally usable burner holder is obtained in the form of a gas feed tube, the outlet side of which is closed by an exchangeable flow plate embodying the invention. When changing the burner capacity, the burner holder, inclusive of a gas feed tube, can be maintained and it is only necessary to replace the flow plate, with the mounting part of the burner comprising the mixing tube and the burner cover. The choice of the burner capacity can be made at the site of use, since the manipulations described above are quite simple. In order to simplify mounting, the flow plate is preferably connected by means of a clamping joint with the intermediary of a flexible ring with the gas feed tube. Thus, by removing a few bolts the flow plate can be removed in a simple manner.

With a given type of flow plate is associated a given type of mixing tube. In order to avoid an unintentional combination of a mixing tube with a non-matching type of flowplate, the flow plate and the mixing tube are provided with relatively cooperating extensions and recesses. It is thus ensured that for a given flow plate, the matching type of mixing tube will always be used. The size, place and number of extensions and recesses depend on the burner capacity. A further simplification is obtained in that the mixing tube has only one flow channel. The number, the place and the size of the apertures in the flow plate depend on the burner capacity.

BRIEF DESCRIPTION OF DRAWINGS

The invention will be described more fully with reference to the accompanying drawings.

FIG. 1 is a sectional view of the burner embodying the invention,

FIG. 2 is the burner of FIG. 1, the component parts being and disassembled,

FIG. 3 is a mixing tube with a flow plate of a capacity differing from that of FIG. 2.

The gas burner embodying the invention comprises a burner holder including a gas feed tube 1a, which is connected through a clamping joint with the gas duct 2. The outlet side of the gas feed tube 1a is provided with a flow plate 3, which is clamped in sealing relationship to the burner holder 1 by means of the bolts 11,12 with the interposition of a flexible ring 4. The flow plate 3 has apertures 6,7 and 8, dependent on the desired burner capacity. On the burner holder 1 is disposed a mixing tube 9, which has only one flow channel 10. By means of the screws 11 and 12 the mixing tube 9 is fastened to the burner holder 1. With the mixing tube 9 are connected the burner cup 13, the auxiliary gas ring 14 and the burner cover 15. In the gas burner embodying the invention the burner cup 13 has the shape of an enamelled ornamental plate, which serves to cover the air stream apertures. The assembly is fastened by means of bolts 16 and 17 to the frame of the cooker.

The flow plate 3 has recesses 18,19 and 20, the recesses 18 and 20 co-operating with centering lugs 21 and 22 respectively and the recess 19 cooperating with an extension 26 on the mixing tube 9. The placement of the recess 19 and of the extension 26 respectively depends on the desired burner capacity. In the design shown in FIG. 3 the placement of the recess 23 is shifted with respect to the recess 19 of FIG. 2. This also applies to the extension 24 on the mixing tube of FIG. 3. It is in this way guaranteed that the desired flow plate will invariably be used with the matching mixing tube.

In the gas burner embodying the invention the burner holder inclusive of the gas feed tube 1 can be a universally applicable component while also the diameter of the opening in the collecting dish is independent of the load. In dependence on the burner capacity a matching flow plate 3 and the associated mixing tube 9 are mounted in the burner holder. Thanks to the screw joints 16,17 and 11,12 mounting can be readily carried out.

I claim:

1. A gas burner for use in a domestic cooking apparatus comprising in combination:

- a burner holder including a gas feed tube;
- an interchangeable flow plate having apertures therein, the number of apertures being determined by the desired capacity of the burner, said flow plate comprising recesses for regulating the positioning of said flow plate with respect to said burner holder;
- a flexible ring provided as a seal between said flow plate and said burner holder;
- an associated mixing tube having respective inlet and outlet portions in which air is mixed with gas, said mixing tube comprising an extension connecting with a corresponding recess of said flow plate; and
- a burner cover provided at the outlet of said mixing tube said flow plate and mixing tube being a matched pair whereby the capacity of said gas burner can be readily varied by changing both said flow plate and mixing tube by the substitution of the appropriate flow plate and cooperating mixing tube.

2. The gas burner of claim 1 characterized in that said mixing tube has a single flow channel.

* * * * *

United States Patent

(11) 3,597,135

[72] Inventors Esher R. Kweiler
Downers Grove;
Robert B. Rosenberg, Evergreen Park;
Jaroslav Batorfalvy, Chicago, all of, Ill.
[21] Appl. No. 820,449
[22] Filed Apr. 30, 1969
[45] Patented Aug. 3, 1971
[73] Assignee Institute of Gas Technology

2,087,416 7/1937 Tinnerman 239/568 X
2,661,798 12/1953 Clevenger et al. 431/258 X
3,015,329 1/1962 Chambers 126/39
3,330,326 7/1967 Shinpeigomi et al. 431/286 X

Primary Examiner—Carroll B. Dority, Jr.
Attorney—Molinare, Allegretti, Newitt & Witcoff

[54] GAS BURNER STRUCTURE 7 Claims, 9 Drawing Figs.

[52] U.S. Cl. 431/258,
431/286, 431/354, 239/550, 239/568
[51] Int. Cl. F23q 7/06
[50] Field of Search. 431/258,
286, 354; 126/39, 39 I, 39 K; 239/398, 550, 568

[56] References Cited
UNITED STATES PATENTS
1,496,790 6/1924 Stewart 239/550 X

ABSTRACT: A gas burner for a gas range top. The structure includes a plate portion which is mounted on the range top and a plurality of upright portions which are mounted on the plate portion. A chamber is located below the plate portion. Passageways extend from the chamber and pass outwardly through the upright portions. Means are provided for introducing a combustible gas into the chamber and through the passageways. Means are provided for igniting the combustible gas as it passes outwardly through the upright portions.

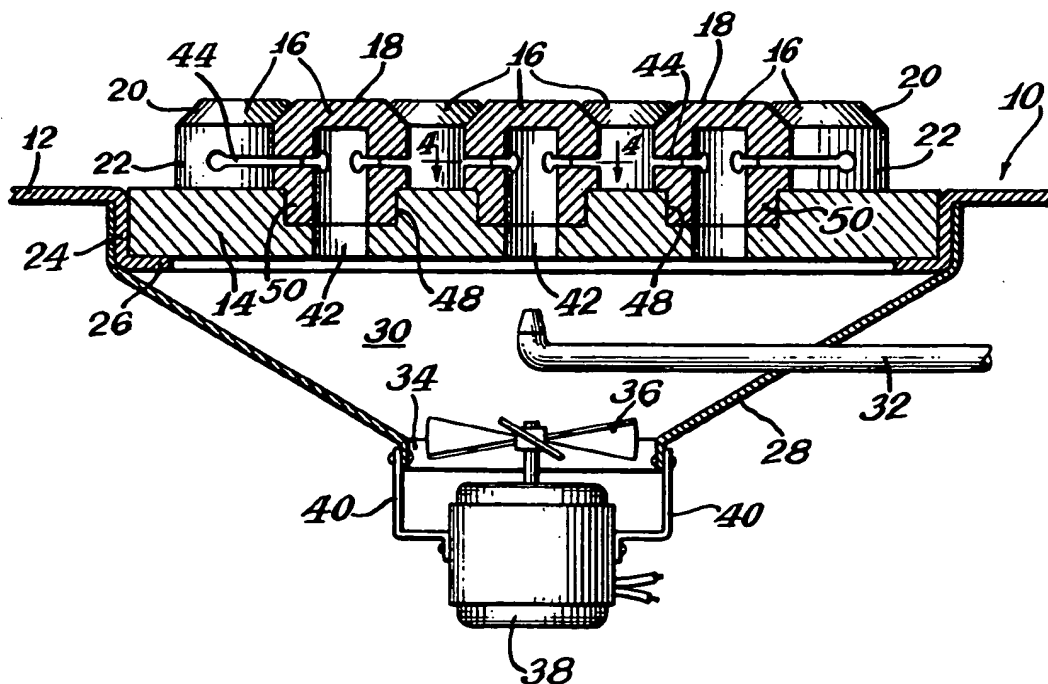
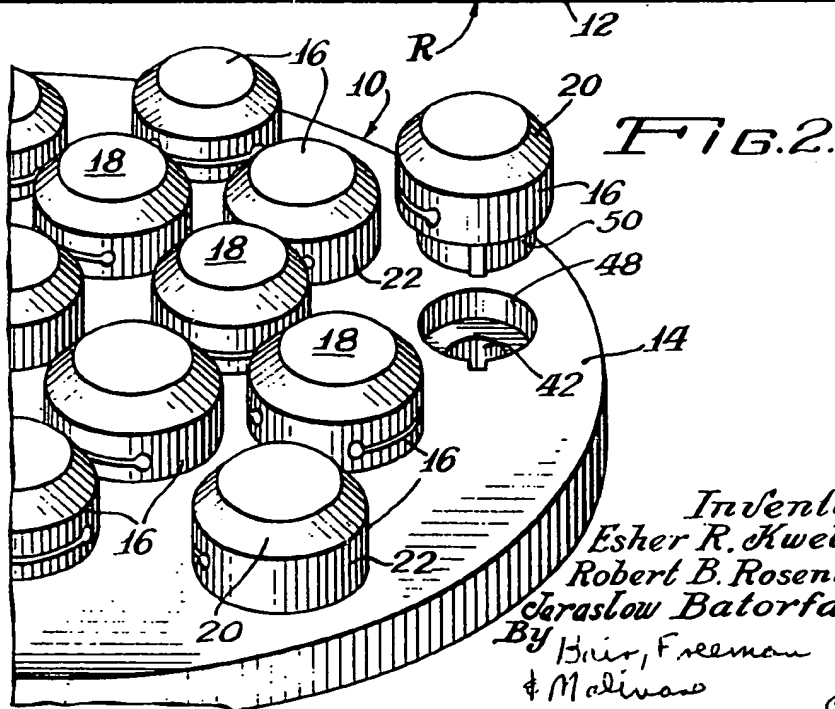
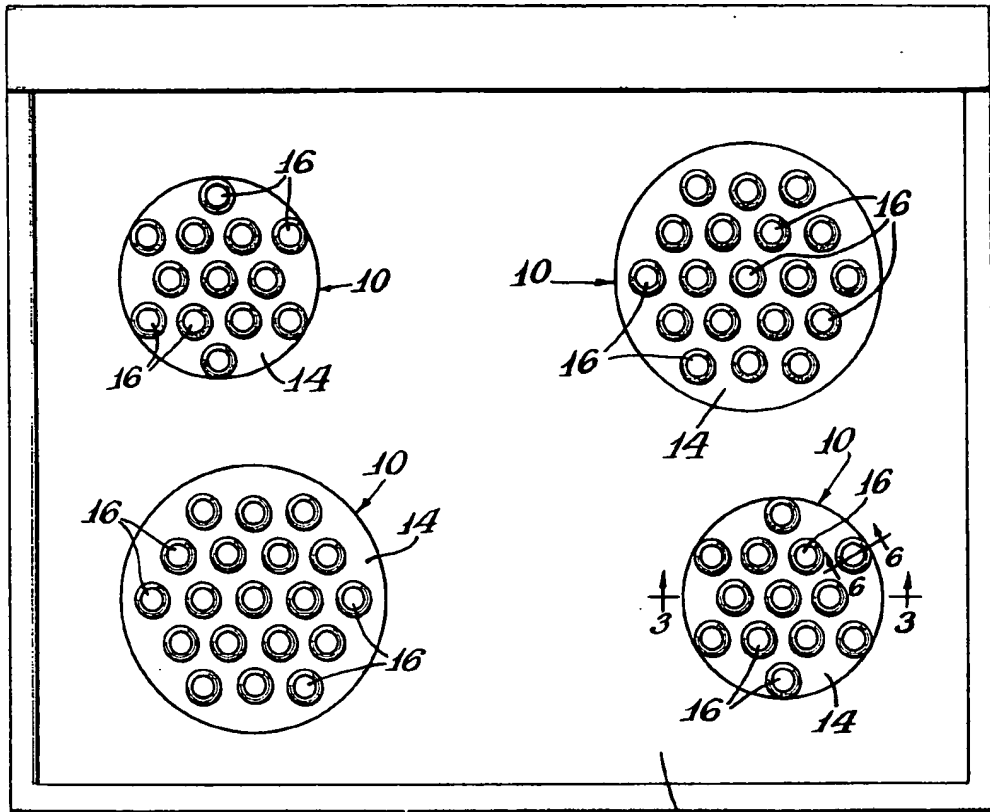


FIG. 1.



Inventors:
 Esher R. Kweller
 Robert B. Rosenberg
 Jaraslaw Batorfalvy
 By Bair, Freeman
 & Malinow Attys.

FIG. 3.

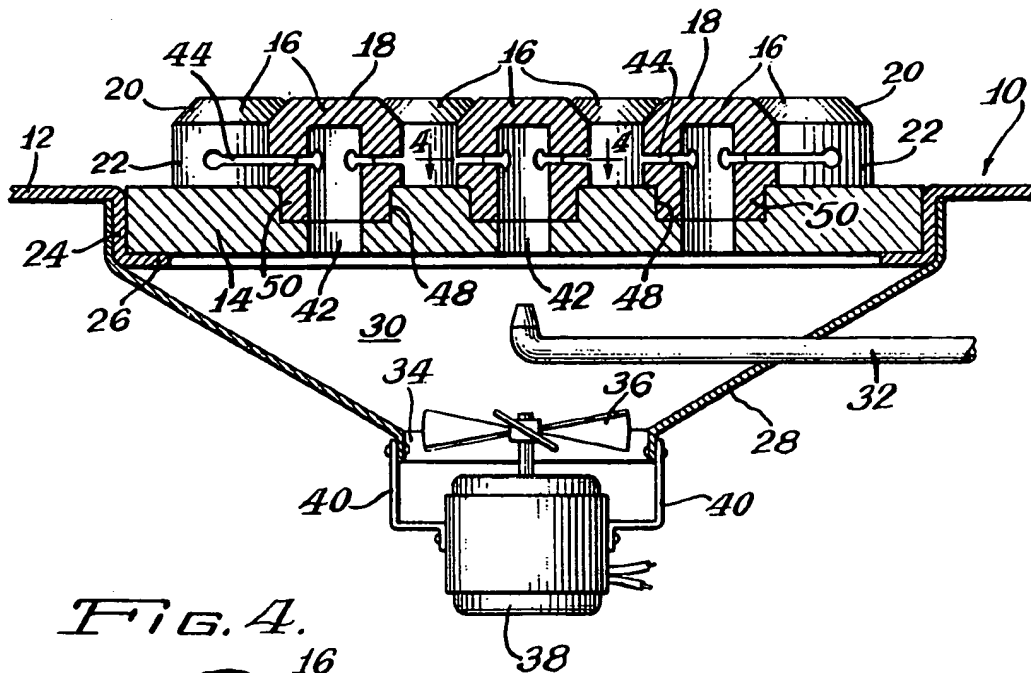


FIG. 4.

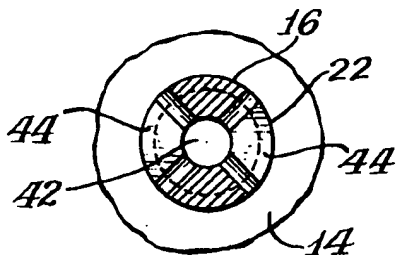


FIG. 5.

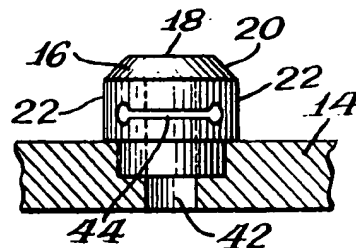


FIG. 6.

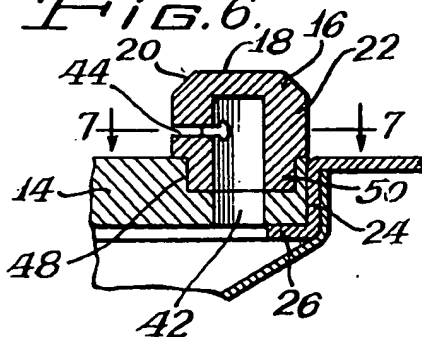
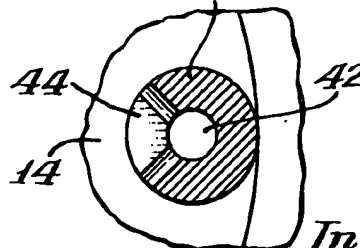
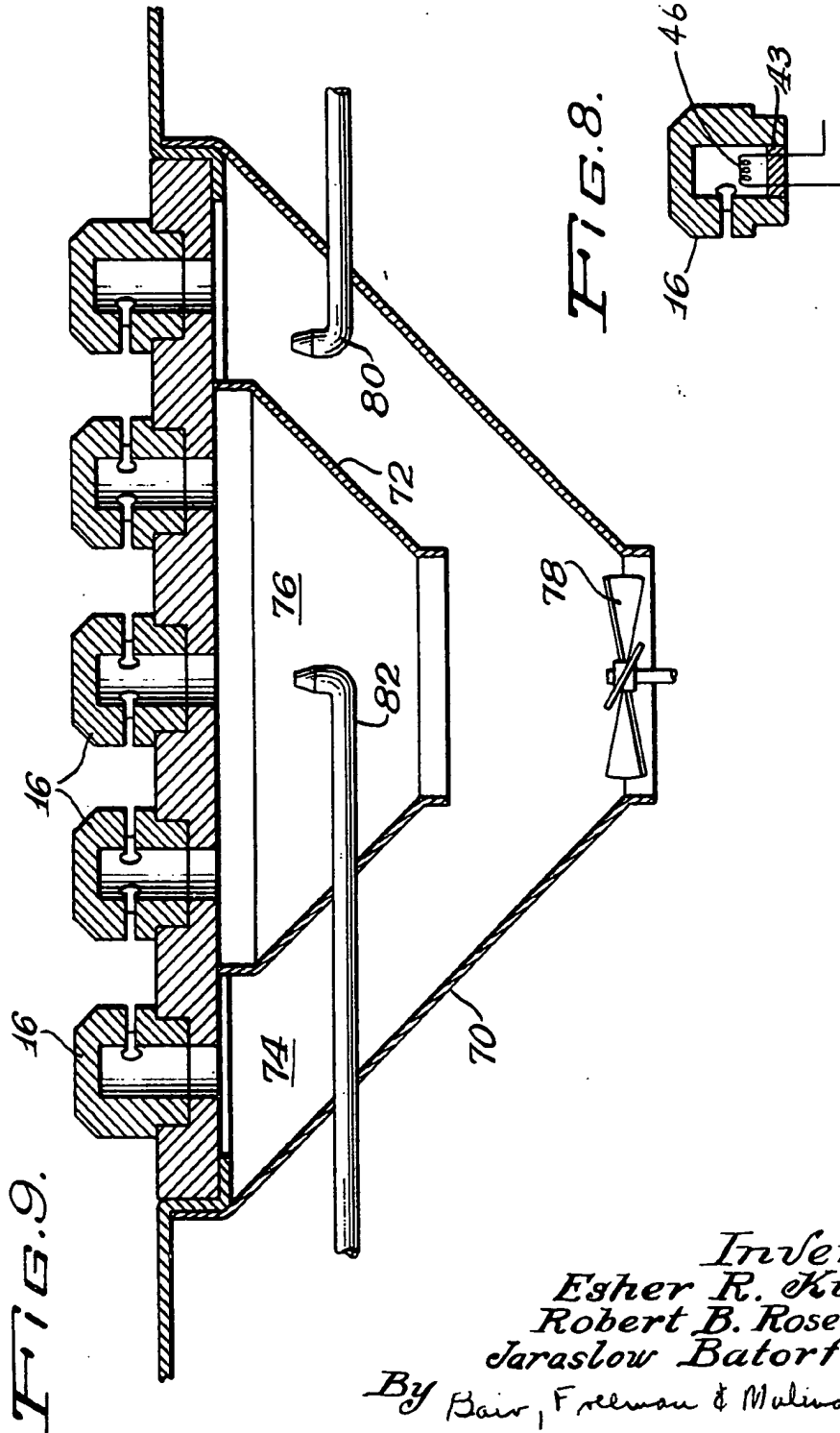


FIG. 7.



Inventors:
 Esher R. Kweller
 Robert B. Rosenberg
 Jaraslow Batorfalvy
 By Bair, Freeman & Malinows
 Attys.



Inventors:
Esher R. Kweller
Robert B. Rosenberg
Jaroslav Batorfalvy
By *Bair, Freeman & Malinow*
Attys.

GAS BURNER STRUCTURE

BACKGROUND OF THE INVENTION

Field of the Invention and Description of the Prior Art

This invention relates to a gas burner structure for use on a gas range top.

For years, gas ranges have been conventionally constructed by providing openings in the range top with a burner located in each of the openings in the range top. The burner is connected to a gas manifold which passes the natural gas into the burner. A grate is normally mounted on the gas range top over the opening to provide support for a pot or pan, at a location spaced above the burner.

Such conventional prior art burner structures have certain inherent disadvantages. One of the primary disadvantages of the conventional burner design is the difficulty encountered in cleaning the range. First, the burner grate must be removed and separately cleaned. Furthermore, because of the annular opening that is provided between the burner and the gas range top, food, crumbs, liquid spillage, boiled-over material, and the like pass downwardly through the annular space. This often necessitates cleaning the burner box normally found below the gas range top and this cleaning often requires complete dismantling of the burners from the main gas manifold. It involves removal of the grates and sometimes parts of the gas range top must be removed. Generally, conventional gas range burners cause difficult cleaning problems.

Conventional burners are also rather inefficient because they use more than the stoichiometric amount of air for complete combustion. The air-gas mixture issuing from a conventional burner contains about 40-50 percent of the theoretical amount of air needed for complete combustion. The remaining air is supplied as secondary air which diffuses to the flame. The secondary air normally passes up through the burner opening in the range top. Since more air is used than is theoretically needed to complete combustion and the excess air is heated by the flame, a lower combustion product temperature results in a conventional gas burner.

SUMMARY OF THE INVENTION

It is therefore an important object of this invention to provide an improved gas burner for use on a gas range top wherein many of the disadvantages of conventional gas burners are avoided.

It is also an object of this invention to provide a gas burner which is particularly easy to clean and substantially prevents undesired passage of food and liquid downwardly on to the top of the burner box located below the range top.

It is a further object of this invention to provide a gas burner which is of exceptionally high efficiency because heat is applied to a pot or a pan by heat of radiation, by heat of convection, and by heat of conduction, and a relatively large area of the pot or pan is directly heated by the main burner.

It still is a further object of the invention to provide a gas burner structure wherein all the air required for combustion is supplied as primary air, with a minimum of excess air, so the combustion products are at a higher temperature.

It is yet another object of this invention to provide a gas burner having a plurality of upright members which have the dual function of providing support for a pot or a pan and of retaining the flame.

It is yet a further object of this invention to provide a gas burner wherein the gas burners are self-cleaned by combustion of any material which comes into direct contact with the burner.

Further purposes and objects of this invention will appear as the specification proceeds.

The foregoing objects are accomplished by providing a gas burner for use on a gas range top wherein the structure includes a planar monolithic portion received by the range top, a plurality of upright portions on the plate portion, a chamber below the plate portion, passageways extending from the

chamber into the upright portions and passing laterally outwardly therethrough, means for introducing a combustible gaseous medium into the chamber and for directing the combustible medium through the passageways, and means for igniting the combustible medium as it passes laterally outwardly from the upright portions.

BRIEF DESCRIPTION OF THE DRAWINGS

A particular embodiment of the present invention is illustrated in the accompanying drawings wherein:

FIG. 1 is a top plan view of a gas range top using a plurality of our improved gas burner structures;

FIG. 2 is a perspective view of one embodiment of our improved gas burner;

FIG. 3 is an enlarged, transverse cross-sectional view through the improved gas burner, taken along the line 3-3 of FIG. 1;

FIG. 4 is a cross-sectional view, taken along the line 4-4 of FIG. 3, showing an individual upright flame retention member used on our gas range burner;

FIG. 5 is a detailed side view of one upright flame retention member used on our improved gas burner;

FIG. 6 is an enlarged transverse cross-sectional view through an individual upright member, taken along the line 6-6 of FIG. 1;

FIG. 7 is a cross-sectional view, taken along the line 7-7 of the embodiment of FIG. 6, showing a flame retention member at the outer periphery of the burner structure;

FIG. 8 is a detailed view of a burner post containing an ignition coil; and

FIG. 9 is an alternate embodiment of our invention wherein inner and outer burner rings are provided.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring particularly to FIG. 1 of the drawings, a plurality of our improved burner structures, generally 10, shown as being of varying sizes, are mounted on the top 12 of a gas range R.

Referring to FIG. 2, the burner structure 10 generally includes a monolithic, preferably circular plate 14 having a plurality of upright members or posts 16 secured thereto and projecting therefrom. The posts 16 are generally cylindrical in shape and have a height which is substantially equal to their diameter. The upper surface 18 of each of the posts 16 is flat and provides support for a pot or pan. The upper surfaces 18 of each of the posts 16 are all at substantially the same level so that a pot or pan is firmly supported by a plurality of the posts 16. Desirably, a beveled edge 20 is provided at the intersection between the flat upper surface 18 and the cylindrical sidewall 22 of each post 16.

Referring to FIG. 3, one of the burners 10 is shown in partially sectioned view and is mounted in the range top 12. The range top 12 includes apertures, preferably circular, defined by downwardly extending walls 24, cylindrical in shape, which terminate with an inwardly extending, annular flange 26. The circular outer periphery of the plate 14 is snugly received by the wall 24 and the lower outer edge of the plate 14 is vertically supported by the inwardly extending flange 26. A snug fit is provided between the outer periphery of the plate 14 and the wall 24 so little, if any, material spilled on the range surface can pass between the burner 10 and the walls 24. The range top 12 and burner plate 14 therefore combine to provide a substantially continuous upper surface on top for the range R.

A downwardly extending enclosure member 28 is securely received around the outer surface of the downwardly extending wall 24 of the range top 12. The enclosure member 28 defines a plenum or chamber 30 wherein a combustible gaseous medium is added. Preferably, the combustible medium is a mixture of air and natural gas added from separate sources.

A manifold 32 passes through the wall of the enclosure member 28 and directs natural gas into the chamber 30. An

air inlet 34 is located in the lower wall of the enclosure member 28. A fan or blower 36 is mounted in the air inlet 34. The blower 36 is driven by a motor 38 which has outer casing rigidly secured to the enclosure member 28 by brackets 40. The blower 36 draws air through the inlet 34 where the air becomes intermixed with the gas in the chamber 30.

As shown in FIGS. 3-7, each of the posts 16, which also perform an important flame retention function, includes an upright passage 42 having a closed upper wall. The passage 42 extends from the plenum 30 and communicates with lateral outlets 44 in the cylindrical sidewall 22 of each of the posts 16. The outlets 44 are generally defined by a central, substantially horizontal slot which interconnects a pair of apertures at its opposite ends.

An electrical ignition coil 46 is located in one of the upright passageways 42 of one of the posts 16. The post which contains the ignition coil 16 is closed from the space 30 by a plug 43. An aperture, as shown in FIG. 8, is provided in the post 16 containing the coil 46 so that the combustible mixture issuing from an adjacent burner post 16 is ignited by the heat from the coil 46. No gas is to be ignited within the post 16 containing the coil. Immediately upon combustion of the gas-air mixture at a burner post 16 adjacent the one containing the coil 46, the remainder of the posts 16 will have the combustible gas-air mixture ignited at the respective outlets 44 substantially simultaneously. This is accomplished by transfer of the combustion from the first post to the remaining posts 16. For this purpose, the outlets 44, as shown in FIG. 2, are in relatively close proximity so that the combustion of the gas-air mixture at one outlet 44 ignites the gas-air mixture at the adjacent outlets.

As shown in FIG. 2, each of the posts 16 is removably, but firmly, received in proper alignment in the plate 14. A key in the post and a keyway in the plate assures the desired proper alignment. The plate 14 includes a plurality of depressions 48 and the posts 16 include a plurality of downwardly extending recessed cylindrical portions 50 which are press fit in the depressions 48. The posts 16 are removable from the plate 14 so that if one of the posts 16 becomes damaged or broken, it may be replaced without replacing the entire burner assembly 10. The plate 14 and posts 16 are preferably constructed of a ceramic material, which is flame resistant, and which is capable of withstanding temperatures imparted by the flame carried by the burner 10. Also the material of construction is to be capable of being cooled in a relatively short period of time so that a person will not burn his hand.

Although the posts 16 at the central portion of the burner assembly 10 include a pair of elongated outlet slots 44 therein, as shown in FIG. 4, the burner posts 16 at the periphery of the plate 14, as shown in FIGS. 6 and 7, preferably have only a single outlet slot 44 facing inwardly, so that the flame area is substantially confined over the burner 10.

FIG. 9 shows an alternate embodiment wherein an outer enclosure 70 and an inner enclosure 72 are provided to define an outer chamber 74 and an inner chamber 76. A fan 78 draws air into both chambers 74 and 76. A gas inlet 80 is provided for introducing gas to the outer chamber 74. A second inlet 82 is provided for introducing gas to the inner chamber 76. The structure permits the operation of the burner with all burner posts 16 operating, gas being supplied to both of the gas inlets 80 and 82 or with only the inner set of burner posts operating, gas being supplied only to the inner gas inlet 82.

When it is desired to use one of the burners 10 in FIGS. 2 and 3, a control knob (not shown) for the particular burner is turned to the "on" position. This opens a solenoid valve (not shown) carried by the manifold 32 so as to permit natural gas to pass through the manifold 32 and into the chamber 30. Simultaneously, an electrical switch (not shown) is closed so that the motor 38 starts and operates the fan 36 to pull air into the chamber 30. Advantageously, the fan motor is controlled by a rheostat (not shown) so as to proportion the airflow to the gas flow. Preferably the rheostat is interconnected to the gas control valve. Simultaneously, the ignition coil 46 is activated by closing another switch (not shown) and is rapidly

brought to the ignition temperature of the air-gas mixture which fills the plenum 30. The air-gas mixture issuing from a port opposite the ignition coil is then ignited. Because of the substantially equidistant and adjacent spacing of the posts 16 to each other, ignition of the air-gas mixture passing through the outlets 44 at the remaining posts.

The burner structure 10 provides many advantages over conventional burner structures. The gas outlets 44 are located between the upper surface of the burner plate 14 and the upper surface 18 of the burner posts 16. Thus, when any material is spilled on the range top, it would be almost impossible for the material to pass through the raised outlets and down into the plenum. Also, because of the close fit between the outer periphery of the burner plate 14 and the inner surface of the wall 24 around the opening in the burner top, substantially no material can pass therebetween. Also, the burner posts 16 are in close-fitting relationship with the plate 14. Furthermore, if any food or material comes into direct contact with the burner 10 itself, the heat imparted by the burner will cause combustion of the spilled food so that normally only an ash remains, which can be easily wiped off the burner plate.

The described burner structure also provides for heating a pot or pan by heat of convection, by heat of radiation, and by heat of conduction. Since the food pan rests directly upon the flame retention posts 16, heat of conduction is provided. Also, the pots or pans are in close contact with the flame coming from the outlets 44 so that the flame may come into direct contact with the bottom of the pot or pan. The use of a plurality of burner posts 16 causes a substantial portion of a pot or pan to be directly heated. Thus, because of the combined effect of the three types of heating and because of the high area of heating provided by the burner structure 10, the burner structure, as described, has a high level of efficiency, relative to conventional burner structures.

While in the foregoing there has been provided a detailed description of a particular embodiment of the present invention, it is to be understood that all equivalents obvious to those having skill in the art are to be included within the scope of the invention as claimed.

What we claim and desire to secure by Letters Patent is:

1. A gas burner structure for a gas range top, said structure comprising a plate portion received by said range top, a plurality of depressions in said plate portion, a plurality of upright portions having downwardly extending portions snugly received by said depressions, a chamber below said plate portion, passage means extending from said chamber into said upright portions and passing outwardly therethrough, means for introducing a combustible gaseous medium to said chamber and for directing said combustible medium through said passage means, and means for igniting said combustible medium as it passes outwardly from said upright portions.

2. The structure of claim 1 wherein cooperating means are provided on said plate portion and on said upright portions for aligning said upright portions at a desired orientation, relative to each other.

3. The structure of claim 1 wherein said upright portions define upper surfaces, all at substantially the same level, and said passage means extends outwardly from said upright portions to a location between said upper surfaces and said plate portion.

4. The apparatus of claim 3 wherein said plate portion is substantially at the level of said gas range top.

5. The structure of claim 1 wherein said passage means comprise upright apertures in said upright portions and lateral openings in said upright portions in direct communication with said upright apertures.

6. The structure of claim 1 wherein said passage means comprise upright apertures in said upright portions, an outer wall on said upright portions, and elongated transverse apertures in said outer wall for communication with said upright apertures, said upright portions being sufficiently close together so that ignition of said combustible medium at one of said elongated apertures ignites the said combustible medium

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at an elongated transverse aperture adjacent said upright portions.

7. A gas burner structure for a gas range top, said structure comprising a plate portion received by said range top, a plurality of upright portions on said plate portion, a chamber below said plate portion, passage means extending from said chamber into said upright portions and passing outwardly therethrough, a gas manifold extending into said chamber, a

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fan projecting air into said chamber and through said passage means while intermixing said air with said gas, and means for igniting said air and gas mixture as it passes outwardly from said upright portions, said igniting means including electrical coil in said passage means capable of being heated to a temperature at least equal to the ignition temperature of the said gas air mixture.

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TITLE: GAS BURNER

PUBN-DATE: April 16, 1983

INVENTOR-INFORMATION:

NAME

SASADA, KATSUMI

ISHIBASHI, NOBORU

INOUE, SHOJIRO

ASSIGNEE-INFORMATION:

NAME

COUNTRY

MATSUSHITA ELECTRIC IND CO LTD

N/A

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APPL-DATE: October 13, 1981

INT-CL (IPC): F23D013/10

US-CL-CURRENT: 431/354

ABSTRACT:

PURPOSE: To prevent the blockage of main burner ports with boilings-over from spreading by a structure wherein boiling-over barricade dam parts are provided at a burner body in the gas burner comprising the burner body and a cap.

CONSTITUTION: When the ignition operation of the gas burner is performed, gas is jetted in the form of the mixture with air from a mixing chamber 9 to the main burner ports 10 and inner burner ports 11 and ignited, resulting in forming main flames 4 and inner flames 12. In the above-mentioned gas burner, a plurality of dam parts 20 are formed in the periphery of the upper surface of the burner body 7, upon which the cap 8 is placed. Furthermore, flame dividing parts 21, which are same in the number and in the width as those of the dam parts 20, are formed in the cap 8 and as well as the width P_{SB2} of each flame dividing part 21 is made larger than the width P_{SB1} of each flame dividing piece 10'. The flame dividing parts 21 are located in the same row with the flame dividing pieces 10 and in opposite to the individual

dam parts 20. In addition, a notched part 23 is cut at the lower end of the head of the head of the cap 8 so as to be able to fit onto a fitting projection 22 protrudedly provided in the center hole of the burner body 7 in order to make possible the positioning of the cap 8 in such a manner as to face each flame dividing part 21 against each flame dividing part 21 agaainist each flame dam part 20.

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⑫ 公開特許公報 (A)

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審査請求 未請求

(全 3 頁)

⑭ ガスパーナ

門真市大字門真1006番地松下電
器産業株式会社内

⑯ 特 願 昭56—162098

⑰ 発 明 者 井上象二郎

⑱ 出 願 昭56(1981)10月13日

門真市大字門真1006番地松下電
器産業株式会社内

⑲ 発 明 者 佐々田勝視

門真市大字門真1006番地松下電
器産業株式会社内

⑳ 出 願 人 松下電器産業株式会社

門真市大字門真1006番地

㉑ 発 明 者 石橋昇

㉒ 代 理 人 弁理士 星野恒司

明 細 書

1. 発明の名称

ガスパーナ

2. 特許請求の範囲

(1) パーナボディーとキャップを構成要素とするガスパーナにおいて、パーナボディーの上面部外周に複数の煮溢れ防塞用の堰部を設けたことを特徴とするガスパーナ。

(2) パーナボディーとキャップを構成要素とするガスパーナにおいて、パーナボディーの上面部外周に複数の煮溢れ防塞用の堰部を設けると共に、キャップに設けられている隔炎片の内、前記堰部と同数の隔炎部をその位置と巾を堰部の位置と巾に合致せしめて設け、パーナボディーとキャップに堰部と隔炎部が相対向する如く位置決めを行なう手段を備えたことを特徴とするガスパーナ。

3. 発明の詳細な説明

本発明は、ガスパーナに煮汁が煮溢れした場合、これが主炎孔に拡散して広範囲に目詰まりを起こすことを防止したガスパーナを提供することを目

的とするものである。

先ず、従来のガスパーナの構成と、その煮溢れに対する弱点について説明する。

第1図はガステーブルの外観正面図、第2図、第3図は従来のガスパーナの構成を示す。これ等の図において、1はガステーブル、2は点火摘み、3はガスパーナ、4は主炎、5は五徳、6は鍋、7はパーナボディー、8はキャップ、9は混合気室、10は主炎孔、10'は隔炎片で、キャップ8の裏面に全円周にわたって櫛の歯状に突設され、その歯と歯の間の間隙に当る部分が前記主炎孔10である。11は内炎孔、12は内炎、13はパーナボディーの上面部、14はキャップ外周上面部、15はパーナボディーの上面部13と隔炎片10'との接触面である。以上が従来のガスパーナとこれを備えたガステーブルの構成である。

このようなガスパーナ3の点火摘み2を点火操作すると、ガスは空気との混合気となり、混合気室9を経て主炎孔10と内炎孔11から噴出点火されて主炎4と内炎12となり、鍋6を加熱し、

やがて沸騰させる。沸騰し始めると鍋の蓋を取るか、火を細めるか消すか、或いは鍋を下ろすかしないと往々にして煮溢れを生じる。煮溢れは主としてキャップの外周上面部14とパーナボディーの上面部13のあたりに流れ落ちる。流れ落ちた煮汁は接触面15の毛細管現象も手伝って横に広がり主炎孔10に目詰まりを生じる。場合によっては主炎孔10の大部分或いは全部に目詰まりが発生する。こうなると、混合気は内炎孔11に集中するから内炎12は異常に大きくなる。また混合気圧が高くなるので空気の吸入が減り、混合気中の酸素が不足して黄炎現象を起して鍋底に煤を付着させると共に、空気吸入口（図示せず）から生ガスを大気中に溢散するという危険な状態になる。

本発明は、以上従来の欠点を無くするため煮溢れの横への広がりを防止するものである。第4図乃至第6図は本発明の一実施例を示す。これ等の図において、第1乃至第3図と同一符号の部分は同一部分を示す。20はパーナボディーの上面部

13の複数箇所（本実施例においては4箇所）に設けた堰部である。

以上のように構成された本実施例では、一箇所流れ落ちた煮溢れ液が主炎孔10の出口に沿って横に広がるのを数箇所に設けた堰部により遮断し、主炎孔の目詰まりを一部だけで食い止めることによって先に述べた色々な欠点を解消するものである。

第7図乃至第10図は他の実施例を示す。この実施例においては第1の実施例の構成は凡てこれを採用し更に次のものを加える。

21は隔炎部で、その巾P₁（第10図参照）は先の実施例の堰部20の巾に等しく、隔炎片10'の巾P₁より大であり、これと同列中にある堰部20に相対向するように設けられる。22は嵌合突起で、パーナボディー7の中央穴に突設する。23は切欠部で、キャップ8の頸部下端に刻設され、この切欠部23に嵌合突起22を嵌合した時に隔炎部21が堰部20に相対するようにパーナボディー7とキャップ8が位置決めされる。

このように構成することにより、主炎孔10の主炎4が堰部20に衝突して方向を変え、隣の主炎と干渉して黄炎現象を起し、煤を発生することがなくなる効果を奏する。

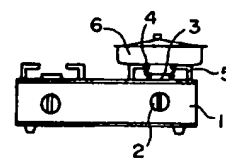
以上説明したように本発明によれば、ガスパーナの煮溢れに基づく主炎孔の目詰まりの拡大を防止し、以って黄炎現象や煤の発生および生ガスの溢出を防止する等その効果は大である。

4. 図面の簡単な説明

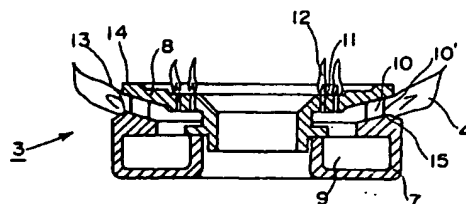
第1図はガステーブルの正面図、第2図は従来のガスパーナの断面図、第3図は従来のパーナボディーの断面図、第4図は本発明の一実施例の断面図、第5図はそのパーナボディーの平面図、第6図は同断面図、第7図は他の実施例の断面図、第8図はその底面図、第9図はそのキャップの断面図、第10図は同底面図である。

3…ガスパーナ、7…パーナボディー、8…キャップ、20…堰部、21…隔炎部、22…嵌合突起、23…切欠部。

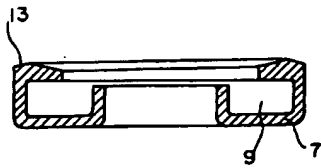
第 1 図



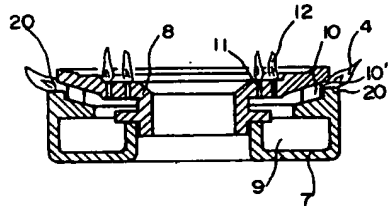
第 2 図



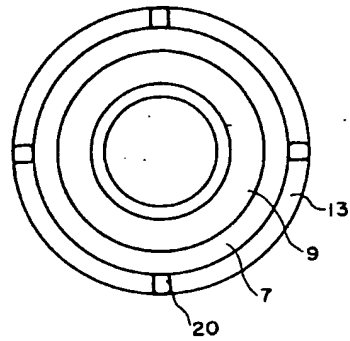
第 3 図



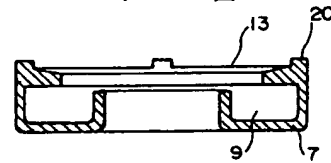
第 4 図



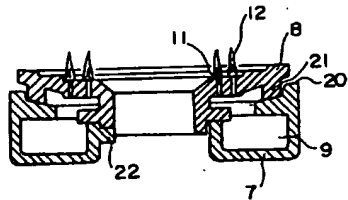
第 5 図



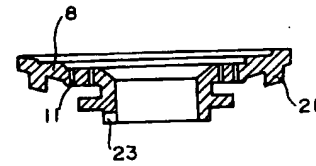
第 6 図



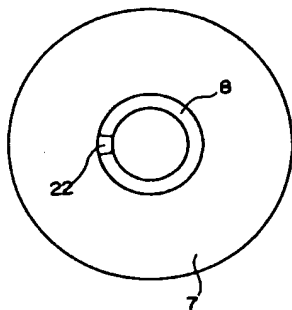
第 7 図



第 9 図



第 8 図



第 10 図

